

## SECTION 303-03A Engine Cooling


### CONTENTS

### PAGE

#### GENERAL PROCEDURES

Cooling System Draining, Filling and Bleeding .....	303-03A-2
Draining .....	303-03A-2
Filling and Bleeding with RADIATOR REFILLER .....	303-03A-2
Filling and Bleeding without RADIATOR REFILLER .....	303-03A-3

**GENERAL PROCEDURES****Cooling System Draining, Filling and Bleeding****Special Tool(s)**

 <p>ST2818-A</p>	<p>RADIATOR REFILLER 078-00592</p>
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**Material**

Item	Specification
Motorcraft® Premium Gold Engine Coolant VC-7-B (US); CVC-7-B (Canada)	WSS-M97B51-A1

**Draining**

 **WARNING:**

Always allow the engine to cool before opening the cooling system. Do not unscrew the coolant pressure relief cap when the engine is operating or the cooling system is hot. The cooling system is under pressure; steam and hot liquid can come out forcefully when the cap is loosened slightly. Failure to follow these instructions may result in serious personal injury.

**NOTICE:**

The coolant must be recovered in a suitable, clean container for reuse. If the coolant is contaminated, it must be recycled or disposed of correctly. Using contaminated coolant may result in damage to the engine or cooling system components.

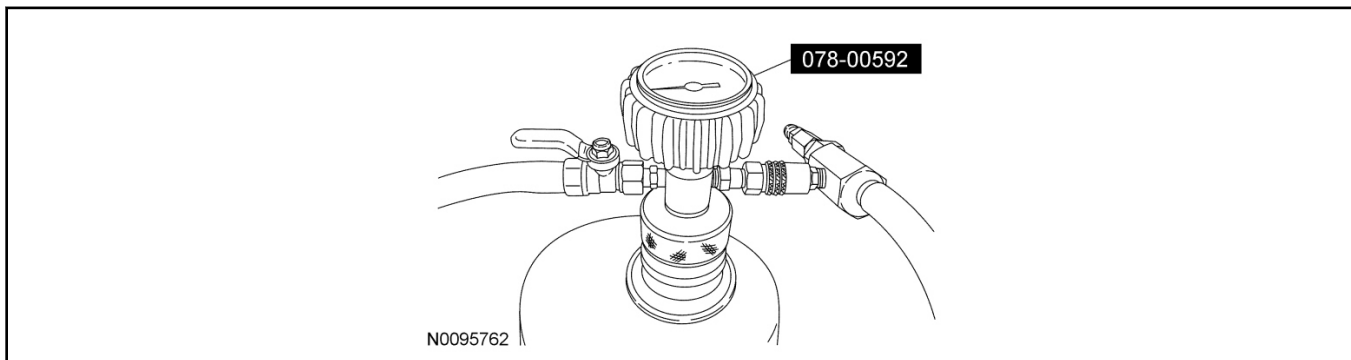
**NOTE:**

Less than 80% of coolant capacity can be recovered with the engine in the vehicle. Dirty, rusty or contaminated coolant should be drained and filled with new coolant.

1. Release the pressure in the cooling system by slowly turning the pressure relief cap one half turn counterclockwise or the radiator cap counterclockwise to the first stop. When the pressure is released, remove the pressure relief cap/radiator cap.
2. Place a suitable container below the radiator draincock. Open the draincock and drain the engine coolant.
  - Close the radiator draincock.

**Filling and Bleeding with RADIATOR REFILLER**

1. Install the RADIATOR REFILLER and follow the manufacturer's instructions to fill and bleed the cooling system.
  - Recommended coolant concentration is 50/50 ethylene glycol to distilled water.
    - Maximum coolant concentration is 60/40 for cold weather areas.
    - Minimum coolant concentration is 40/60 for warm weather areas.



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**GENERAL PROCEDURES (Continued)****Filling and Bleeding without RADIATOR REFILLER****NOTICE:**

The engine cooling system is filled with Motorcraft Premium Gold Engine Coolant. Mixing coolant types degrades the corrosion protection of Motorcraft Premium Gold Engine Coolant.

**NOTICE:**

Engine coolant provides freeze protection, boil protection, cooling efficiency, and corrosion protection to the engine and cooling components. In order to obtain these protections, the engine coolant must be maintained at the correct concentration and fluid level in the degas bottle. To maintain the integrity of the coolant and the cooling system:

- Add Motorcraft Premium Gold Engine Coolant or equivalent meeting Ford specification WSS-M97B51-A1 (yellow color). Use the same coolant that was drained from the cooling system. Do not mix coolant types.
  - Do not add/mix orange-colored Motorcraft Speciality Orange Engine Coolant or equivalent meeting Ford specification WSS-M97B44-D. Mixing coolants may degrade the coolant's corrosion protection.
  - Do not add alcohol, methanol, or brine, or any engine coolants mixed with alcohol or methanol antifreeze. These can cause engine damage from overheating or freezing.
  - Ford Motor Company does NOT recommend the use of recycled engine coolant in vehicles originally equipped with Motorcraft Premium Gold Engine Coolant since a Ford-approved recycling process is not yet available.
1. Fill the radiator through the degas bottle until the coolant level is between the COOLANT FILL LEVEL marks.
    - Recommended coolant concentration is 50/50 ethylene glycol to distilled water.
      - Maximum coolant concentration is 60/40 for cold weather areas.
      - Minimum coolant concentration is 40/60 for warm weather areas.
  2. Select the maximum heater temperature and blower motor speed settings. Position the control to discharge air at A/C vents in instrument panel.
  3. Start the engine and allow to idle. While engine is idling, feel for hot air at A/C vents.
  4. **NOTICE:**  
**If the air discharge remains cool and the Engine Coolant Temperature (ECT) gauge does not move, the engine coolant level is low and must be filled. Stop the engine, allow the engine to cool and fill cooling system. Failure to follow these instructions may result in damage to the engine.**  
  
Start the engine and allow it to idle until normal operating temperature is reached. Hot air should discharge from A/C vents. The Engine Coolant Temperature (ECT) gauge should maintain a stabilized reading in the middle of the NORMAL range. The upper radiator hose should feel hot to the touch.
  5. Shut the engine off and allow the engine to cool.
  6. Check the engine for coolant leaks.
  7. Check the engine coolant level in the degas bottle and fill as necessary.